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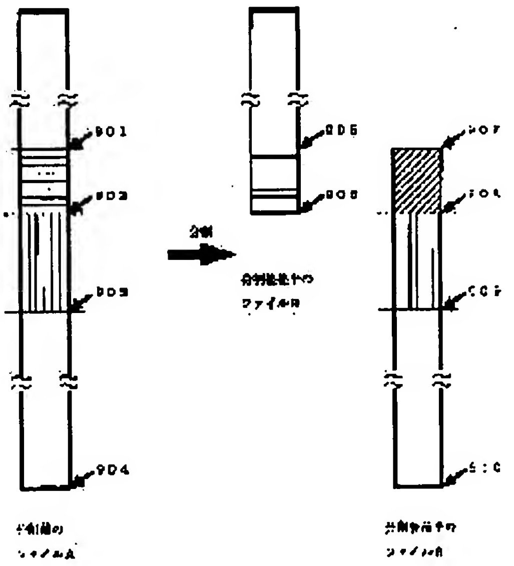
(54) IMAGE FOUND RECORDING/REPRODUCING DEVICE

(57)Abstract:



PROBLEM TO BE SOLVED: To realize a file division almost not using a work area by dividing and processing a file with a GOP header or an AAU header and making the open part of a cluster a padding.

SOLUTION: The size from the GOP header 902 to a rift 903 of cluster is obtained, and the length of a padding packet attached to the top of a file B is calculated, and a padding header and a system header are attached to the top 907 of the file B. Then, the size of the padding packet length is made to be a the padding packet. The part up to the rift 903 of cluster of a retrieved file A is copied to the file B, and the part after the rift of cluster is attached to the file B by revising arrangement information. The video packet length, the time stamp, etc., of the top of the file B are revised, a part after the GOP header 902 of the file A is cut off, finally, a sequence end and an end code are attached and the file A and the file B after the division are completed.

LEGAL STATUS

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[Date of requesting appeal against examiner's decision of rejection]	
[Date of extinction of right]	

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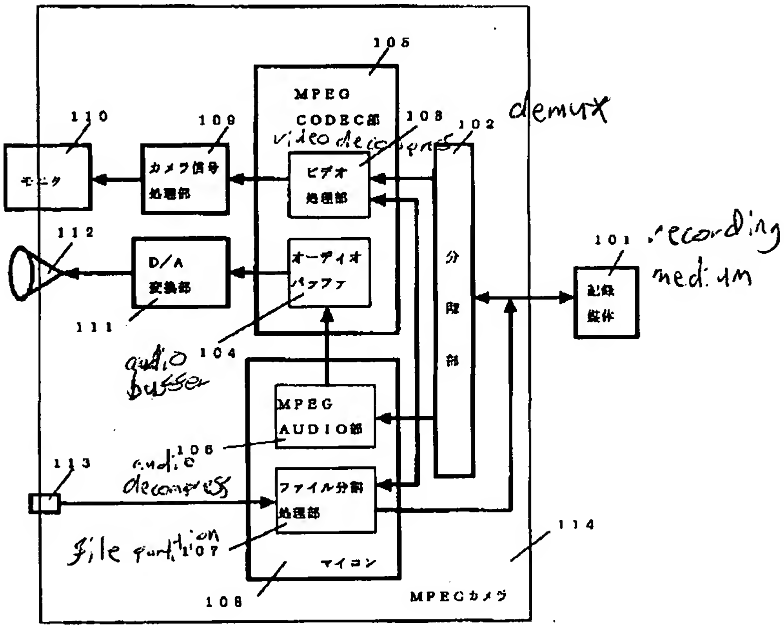
DRAWINGS

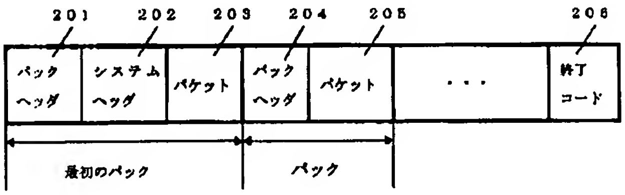
[Drawing 1]

図1


105
MPEG CODEC部
108
102
demux
video decompress
110
109
モニタ
カメラ信号処理部
ビデオ処理部
112
D/A変換部
オーディオバッファ
分離部
101
recording medium
記録媒体
111
audio buffer
104
MPEG AUDIO部
106
audio decompress
113
ファイル分割処理部
file partition
107
マイコン
114
108
MPEGカメラ

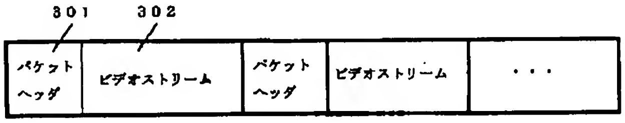
[Drawing 2]

図2


201
202
203
204
205
206
パックヘッダ
システムヘッダ
パケット
パックヘッダ
パケット
・・・
終了コード
最初のパック
パック

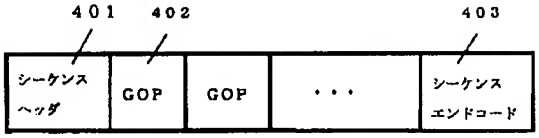
[Drawing 3]

図3


301
302
パケットヘッダ
ビデオストリーム
パケットヘッダ
ビデオストリーム
・・・

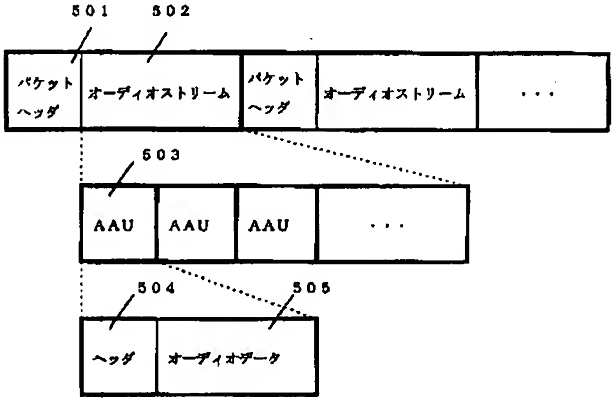
[Drawing 4]

図4


401
402
403
シーケンスヘッダ
GOP
GOP
・・・
シーケンスエンドコード

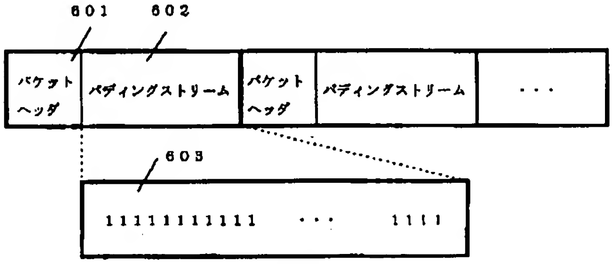
[Drawing 5]

図5


501
502
パケットヘッダ
オーディオストリーム
パケットヘッダ
オーディオストリーム
・・・
503
AAU
AAU
AAU
・・・
504
505
ヘッダ
オーディオデータ

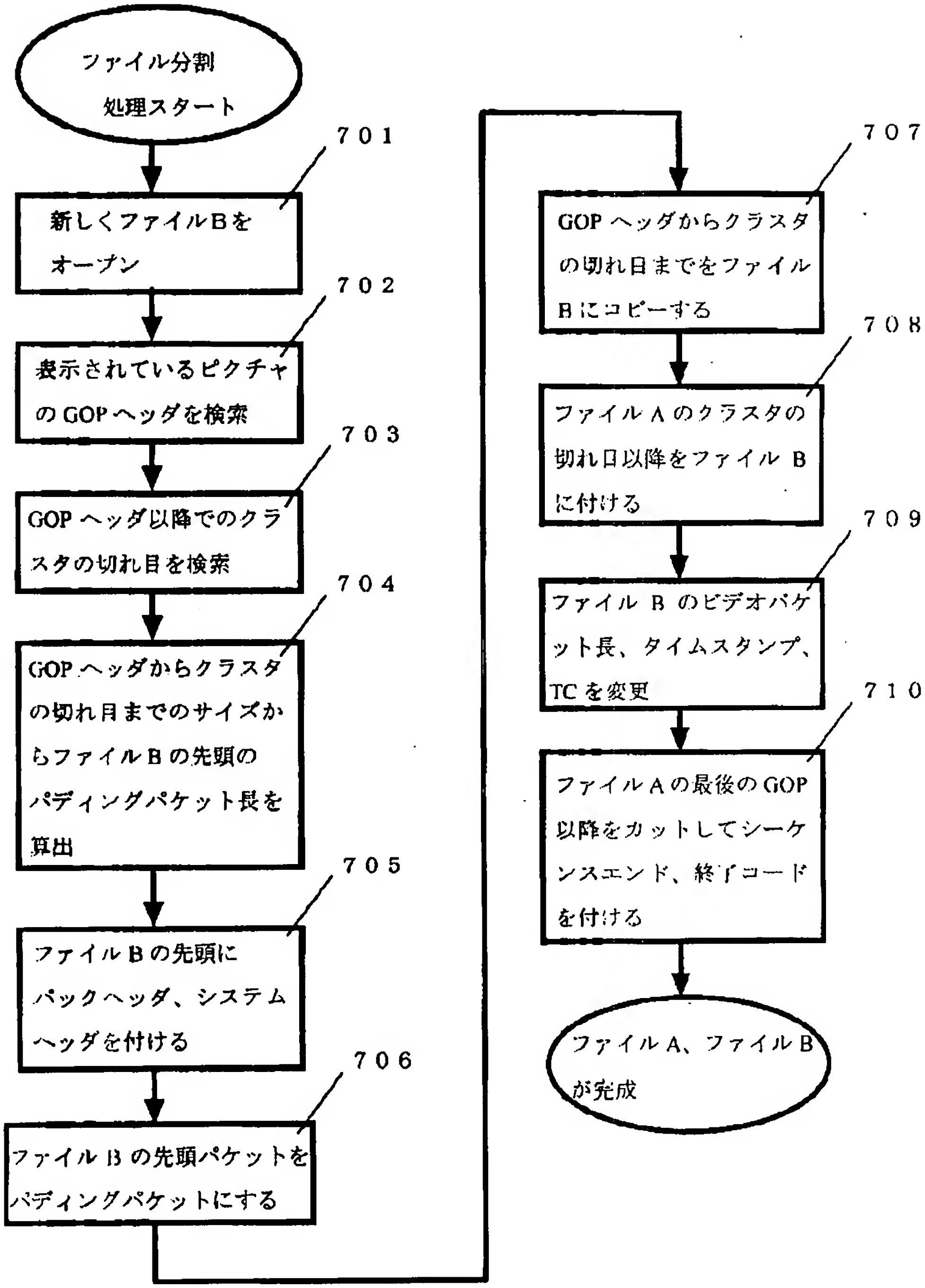
[Drawing 6]

図6


601
602
パケットヘッダ
パディングストリーム
パケットヘッダ
パディングストリーム
・・・
603
11111111111 ・・・ 1111

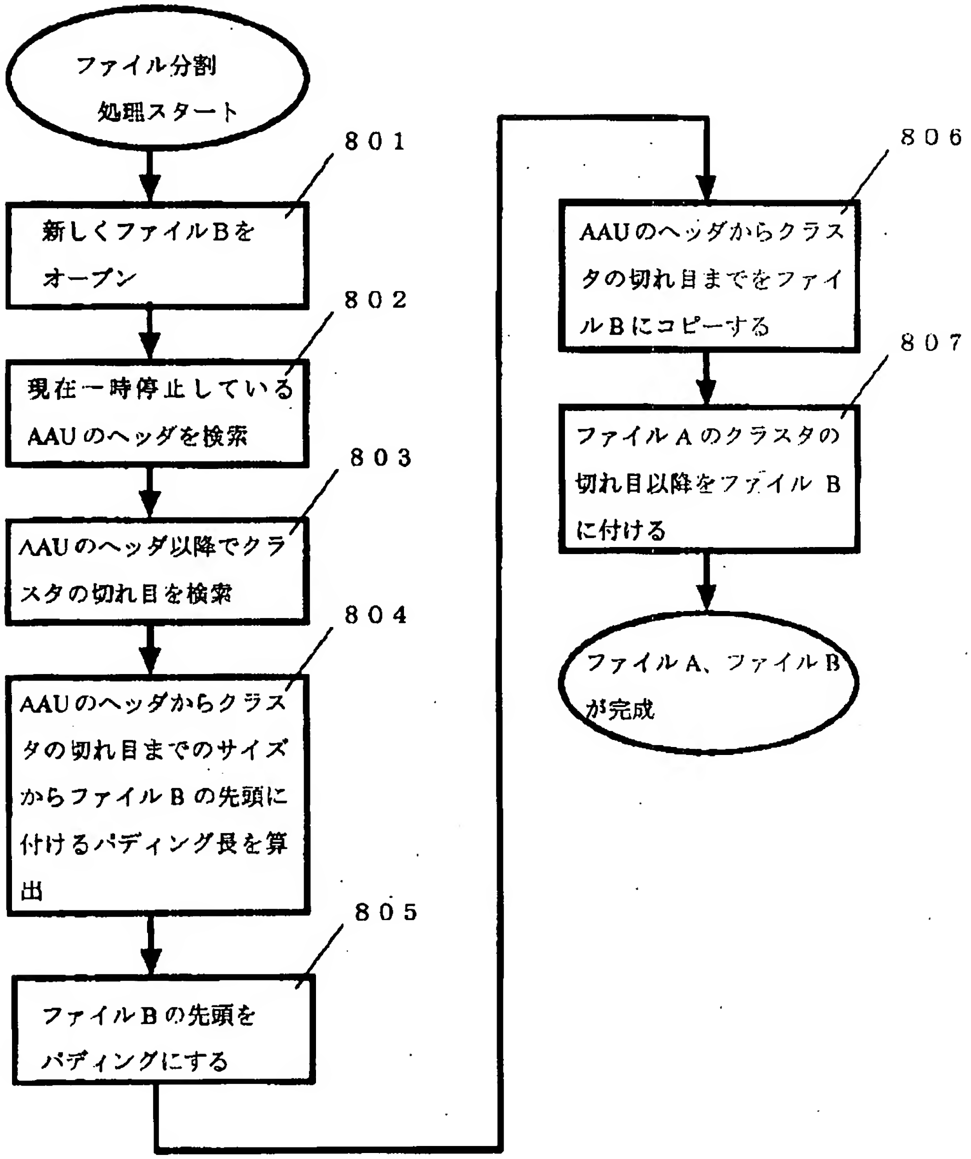
[Drawing 7]

図７


ファイル分割処理スタート
７０１
新しくファイルBをオープン
７０２
表示されているピクチャのGOPヘッダを検索
７０３
GOPヘッダ以降でのクラスタの切れ目を検索
７０４
GOPヘッダからクラスタの切れ目までのサイズからファイルBの先頭のパディングパケット長を算出
７０５
ファイルBの先頭にパックヘッダ、システムヘッダを付ける
７０６
ファイルBの先頭パケットをパディングパケットにする
７０７
GOPヘッダからクラスタの切れ目までをファイルBにコピーする
７０８
ファイルAのクラスタの切れ目以降をファイルBに付ける
７０９
ファイルBのビデオパケット長、タイムスタンプ、TCを変更
７１０
ファイルAの最後のGOP以降をカットしてシーケンスエンド、終了コードを付ける
ファイルA、ファイルBが完成

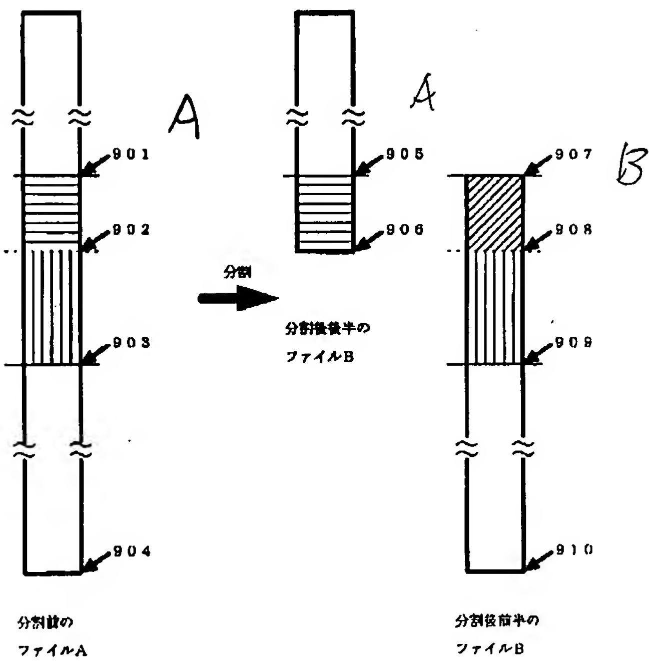
[Drawing 8]

図８


ファイル分割処理スタート
８０１
新しくファイルＢをオープン
８０２
現在一時停止しているAAUのヘッダを検索
８０３
AAUのヘッダ以降でクラスタの切れ目を検索
８０４
AAUのヘッダからクラスタの切れ目までのサイズからファイルＢの先頭に付けるパディング長を算出
８０５
ファイルＢの先頭をパディングにする
８０６
AAUのヘッダからクラスタの切れ目までをファイルＢにコピーする
８０７
ファイルＡのクラスタの切れ目以降をファイルＢに付ける
ファイルＡ、ファイルＢが完成

[Drawing 9]

図9


A
901
902
903
904
分割
A
905
906
分割後後半の
ファイルB
907
B
908
909
910
分割前の
ファイルA
分割後前半の
ファイルB

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing one example of the image voice record regenerative apparatus by this invention.
[Drawing 2] It is drawing explaining a system stream.
[Drawing 3] It is drawing explaining a video packet.
[Drawing 4] It is drawing explaining a video stream.
[Drawing 5] It is drawing explaining an audio packet.
[Drawing 6] It is drawing explaining a padding packet.
[Drawing 7] It is the flow chart of the processing which carries out file division of the file of an MPEG system stream format.
[Drawing 8] It is the flow chart of the processing which carries out file division of the file of a MPEG Audio format.
[Drawing 9] It is drawing explaining signs that the file was divided.
[Description of Notations]
101 ... Record medium
102 ... Separation section
103 ... Video-processing section
104 ... Audio buffer
105 ... The MPEG CODEC section
106 ... The MPEG Audio section
107 ... File division processing section
108 ... Microcomputer
109 ... Camera signal-processing section
110 ... Monitor
111 ... D/A transducer
112 ... Loudspeaker
113 ... File division carbon button
114 ... MPEG camera

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the animation of an MPEG method, and the image voice record regenerative apparatus which has the function to edit a voice file.
[0002]
[Description of the Prior Art] It is indicated by JP,9-182023,A as a processing edit system of the conventional MPEG file (this is hereafter made into a well-known example).
[0003] It is constituted from the device in_which MPEG data are divided into dynamic-image data and voice data, the device which elongates dynamic-image data and voice data, the device in_which dynamic-image data and voice data are processed, the device which compresses dynamic-image data and voice data, and the device which merges dynamic-image data and voice data by this well-known example, after separating the dynamic-image data and the voice data which are compressed and elongating, respectively, processing edit is performed, and it compresses again after that. [finishing / edit processing]
[0004]
[Problem(s) to be Solved by the Invention] If edit processing was carried out and it compressed once again, after elongating the data compressed like before, since the processing time would start expanding and repressing too much, edit processing was not able to be easily performed using the microcomputer.
[0005] So, in this invention, a work area can be easily edited using a microcomputer at high speed by editing, while being compressed without elongating the data compressed, without hardly using.
[0006]
[Means for Solving the Problem] It consists of a D/A transducer which changes the record medium with which the data compressed are recorded, the separation section which separates image data and voice data, the MPEG CODEC section which elongates the compressed image data, the MPEG Audio section which elongates the compressed voice data, the file division processing section which perform division processing of a file, a microcomputer, the camera signal-processing section, a monitor, and digital data into an analog, a loudspeaker, and a file division carbon button.
[0007]
[Embodiment of the Invention] Hereafter, the example of this invention is explained using a drawing.
[0008] First, actuation of the example of this invention is explained.
[0009] Drawing 1 is the block diagram of one example of this invention. The record medium with which the data with which 101 is compressed are recorded in this drawing, The separation section which separates 102 image data and voice data, the video-processing section which elongates the image data with which 103 was compressed, The audio buffer in which 104 stores audio data temporarily, the MPEG CODEC section which 105 becomes from the video-processing section 103 and the audio buffer 104, The MPEG Audio section which elongates the voice data with which 106 was compressed, The file partition body to which 107 performs division processing of a file, the microcomputer with which 108 performs the MPEGAudio section 106 and file division processing section 107 grade, The D/A

transducer from which the camera signal-processing section and 110 change digital data into a monitor, and 109 changes 111 into an analog, and 112 are the MPEG cameras with which a loudspeaker and 113 used the file division carbon button, and 114 used this invention.
[0010] The data which are recorded on the record medium 101 and which are compressed are transmitted to the separation section 102, it separates into image data and voice data, image data are sent to the video-processing section 103, and voice data is sent to the MPEG Audio section 106. It is elongated in the video-processing section 103, and image data are outputted to a monitor 110 through the camera signal section 109. On the other hand, the voice elongated in the MPEG Audio section 106 is temporarily stored in the audio buffer 104, is changed into an analog from digital one by the D/A conversion transducer 111, and is outputted to a loudspeaker 112.
[0011] If the file division carbon button 113 is pushed, the image by which will be in a halt condition and it is indicated by current in the file division processing section 107 will be searched for from the information from the video-processing section 103, and the file on the record medium 101 by which current processing is carried out is divided into two.
[0012] Next, the system stream of MPEG1 currently recorded on the record medium 101 is explained using drawing 2 , drawing 3 , drawing 4 , drawing 5 , and drawing 6 .
[0013] Drawing 2 is a system stream generated in said multiplexing section 113. The system stream of 1 pack 1 packet is shown as one example. The system header which attaches 201 to a pack header and attaches 202 only to the head of a system stream, and 203 are a packet and a termination code in 204 a pack header and 205 indicate a packet and 206 indicates termination of a system stream to be. Thus, a system stream is the assembly of some packs and the packet exists in a pack.
[0014] Next, a packet is explained.
[0015] a packet -- three kinds, a video packet, an audio packet, and a padding packet, -- it is .
[0016] The configuration of a video packet is shown in drawing 3 . 301 is a packet header and 302 is a video stream. A video stream is shown in drawing 4 . As for a sequence header and 402, 401 is [GOP (Group Of Pictures) and 403] the termination codes of a sequence.
[0017] Grouping of the screen of 15 sheets has usually been carried out, at least one sheet of this screen does not use the information on an order screen for 1GOP, but the screen data closed only by one sheet are contained in it. This GOP is used for random access etc.
[0018] The configuration of an audio packet is shown in drawing 5 . 501 is the smallest unit (frame) which can be decoded to the audio signal to which a packet header and 502 are called an audio stream, and 503 is called AAU (Audio Access Unit). The header in which, as for 504, the playback information on an audio is included, and 505 are compressed audio data.
[0019] The configuration of a padding packet is shown in drawing 6 . 601 is [all of a padding stream and 603 of a packet header and 602] padding data of 1. This padding packet is used as a dummy packet, and this data is disregarded at the time of playback.
[0020] Next, processing of the file division processing section 107 is explained using drawing 7 and drawing 9 . Drawing 7 is a flow chart and drawing 9 has shown the situation of file division. The file before division is considered as File A, similarly the file of the first half after division is considered as File A, and the file of the second half after division is considered as File B. The arrangement information which shows in which location of a record medium data are is attached to each file. The smallest unit of the arrangement information is a cluster. The situation of the file before division and the file after division is shown in drawing 9 . The GOP header of the picture with which a current indication of the break of a cluster and 902 is given for 901 and 903, and 904 are the last of a file in the file A before division. The break of the cluster of a location as 901 with 905 [same] and 906 are the breaks of GOP in the file A of half a division back to front. In the file B in the second half of after division, 907 is the break of a cluster, and the break of the cluster of a location as 903 with a GOP header and 909, and 910 is an end of file. [same / 908]
[0021] In file division of the system stream of an MPEG format, a file is divided by the cluster which is the smallest unit of arrangement information, and a system stream is edited on the basis of GOP.
[0022] The flow chart of drawing 7 is explained. In 701, File B is opened newly. The GOP header (902)

to the picture currently displayed on the current monitor 110 is searched with 702. The break (903) of the cluster after the GOP header searched with 702 is searched with 703. In 704, the padding packet size attached to the head of File B in quest of the size (size of 902 to 903) to the break (903) of the cluster searched with 703 from the GOP header (902) searched with 702 is computed. In the head pack of File B, it becomes one pack of a padding packet and a video packet with the configuration of two packets. In 705, the pack header 201 and the system header 202 are attached to the head (907) of File B. In 706, only the magnitude (the lower right from 907 to 908 is **********) of the padding packet size for which it asked by 704 makes the head of File B a padding packet. In 707, (the vertical-line parts from 902 to 903) are copied to File B to the break (903) of the cluster of the file A searched with 703 from the GOP header (902) of the file A searched with 702.

[0023] In 708, the break (parts from 903 to 904) of the cluster of the file A searched with 703 or subsequent ones is attached to File B (parts from 908 to 909) by changing arrangement information. In 709, the video packet size of the head of File B, a time stump, and TC (Time Code the time amount from the head of a sequence is shown) are changed. In 710, the GOP header (902) of the file A searched with 702 or subsequent ones is cut, finally (906) a sequence and 403, and a termination code 206 are attached, and File A and File B after division are completed.

[0024] Next, the method of modification of a time stump and TC is explained.

[0025] There are three, PTS (Presentation Time Stamp, time-of-day-control information on a playback output), DTS (Decoding Time Stamp, time-of-day-control information on decode), and SCR (System Clock Reference, system time-of-day criteria reference value), in a time stump, and relative time of day is shown.

[0026] PTS and DTS are information included in the video packet header, and they use PTS and DTS of the video packet header in which the GOP header before division was contained for PTS and DTS of the second half after division of File B, copying them to them as it is.

[0027] SCR is information included in the pack header, and computes calculation of SCR of a top pack header by the following formulas. If SCR of the 2nd pack is set to SCR2 from a head, SCR to calculate is computable from SCR = SCR2- (number-of-bits x90000 of a pack) (/(bit rate x400)).

[0028] Furthermore, TC in a video stream is also changed. This shows the time amount from the head of a sequence, and is attached for every GOP. Therefore, all TCs of GOP are changed.

[0029] Next, audio file division is explained, using drawing 8 and drawing 9 as the second example. Drawing 8 is a flow chart and drawing 9 has shown the situation of file division. The file before division is considered as File A, similarly the file of the first half after division is considered as File A, and the file of the second half after division is considered as File B. The situation of the file before division and the file after division is shown in drawing 9 . The header of AAU to which 901 and 903 are carrying out a current halt of the break of a cluster and 902, and 904 are the last of a file in the file A before division. The break of the cluster of a location as 901 with 905 [same] and 906 are the breaks of AAU in the file A of half a division back to front. In the file B in the second half of after division, 907 is the break of a cluster, and the break of the cluster of a location as 903 with the header of AAU and 909, and 910 is an end of file. [same / 908]

[0030] It consists of only AAU(s) of 503 which does not have not the form of a system stream like drawing 2 but the packet header 501 of drawing 5 only in the case of voice. In MPEG Audio, since compression expanding processing is performed in this AAU unit, audio file division divides a file by the cluster which is the smallest unit of arrangement information, and edits an audio stream on the basis of AAU.

[0031] The flow chart of drawing 8 is explained. File B is newly opened by 801. The header (902) of AAU which is carrying out a current halt is searched with 802. The break (903) of the cluster after the header of AAU searched with 802 is searched with 803. The padding length who attaches to the head (907) of File B in quest of the size to the break (903) of the cluster searched with 803 from the header (902) of AAU searched with 802 by 804 is computed. Only the magnitude (the lower right from 907 to 908 is ******) of the padding length who asked by 805 804 makes the head of File B padding. All the data of padding were set to 0. That is, the head of File B has begun from the data of padding rather than began from the header of AAU. (The vertical-line parts from 902 to 903) are copied to File B (vertical-line parts from 908 to 909) to the break (903) of the cluster of the file A searched with 803 from the header (902) of AAU of the file A searched with 806 802.

[0032] The break (parts from 903 to 904) of the cluster of the file A searched with 807 803 or subsequent ones is attached to File B by changing arrangement information, and File A and File B after division are completed.

[0033]

[Effect of the Invention] According to this invention, file division can be realized by making into padding the part as for which divided the file by the break of the cluster which is the smallest unit of arrangement information about the file of the system stream of an MPEG format, or a MPEG Audio format, and carried out division processing by the GOP header or the header of AAU, and the cluster was vacant, without hardly using a high speed and a work area.

[Translation done.]

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CLAIMS

[Claim(s)]
[Claim 1] The record medium with which the data compressed are recorded, the file division processing section which performs division processing of a file, the image voice record regenerative apparatus characterized by constituting from a file division carbon button.
[Claim 2] The D/A transducer which changes the record medium with which the data compressed are recorded, the separation section which separate image data and voice data, the MPEG CODEC section which elongate the compressed image data, the MPEG Audio section which elongate the compressed voice data, the file division processing section which perform division processing of a file, the camera signal-processing section, a monitor, and digital data into an analog, a loudspeaker, the image voice record regenerative apparatus carry out constituting from a file division carbon button as the description.

[Claim 3] It is the image voice record regenerative apparatus characterized by the above-mentioned file division processing section dividing a file by changing the arrangement information related with the file in claims 1-2.
[Claim 4] It is the image voice record regenerative apparatus characterized by for the above-mentioned file division processing section dividing a file by the break of the cluster which is the smallest unit of arrangement information, and carrying out division processing for the system stream of an MPEG format per GOP (Group Of Pictures) in claims 1-2.
[Claim 5] The image voice record regenerative apparatus characterized by dividing a file, using the data compressed in division processing of the system stream of an MPEG format according to claim 4 as it is.

[Claim 6] The image voice record regenerative apparatus characterized by making into a padding packet the part as for which divided the file by the break of the cluster which is the smallest unit of arrangement information, and data were vacant with the cluster in division processing of the system stream of an MPEG format according to claim 4.
[Claim 7] It is the image voice record regenerative apparatus characterized by for the above-mentioned file division processing section dividing a file by the break of the cluster which is the smallest unit of arrangement information, and carrying out division processing for the audio stream of a MPEG Audio format per AAU (Audio Access Unit) in claims 1-2.
[Claim 8] The image voice record regenerative apparatus characterized by dividing a file, using the data compressed in division processing of the audio stream of an MPEG Audio format according to claim 7 as it is.
[Claim 9] The image voice record regenerative apparatus characterized by making into padding the part as for which divided the file by the break of the cluster which is the smallest unit of arrangement information, and data were vacant with the cluster in division processing of the audio stream of an MPEG Audio format according to claim 7.

[Translation done.]